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$$x=\left(\frac{n^{\frac{1}{4}}\pm[-3n^{\frac{1}{2}}\pm2\sqrt{(2m+2n)}]^{\frac{1}{2}}}{16}\right)^4.$$

It is a pretty good question in Diophantine Analysis to give such values to m and n as will make x a rational whole number. If $m=17$, and $n=81$, $x=16$ or 1. But if we go back to the original equation, it becomes very easy for n and x may be any fourth powers, say p^4 and q^4, and $m=(p-q)^4+q^4$.

Solved similarly by *G. B. M. ZERR*. F. P. Matz solved it by making $x=m\sin\phi$.

140. **Proposed by G. B. M. ZERR, A. M., Ph. D., Professor of Chemistry and Physics in The Temple College, Philadelphia, Pa.**

A man pays monthly \$24.50 for 8 years for a loan of \$1250. What is the rate %?

Solution by the PROPOSER.

Let $12r$=rate %.

$$\therefore\ 24.50=\frac{1250r(1+r)^{96}}{(1+r)^{96}-1}.$$

$\therefore\ (2500r-49)(1+r)^{96}=49.\quad \therefore\ r=.02203$ nearly. $12r=26.43\%$.

141. **Proposed by JOSEPH V. COLLINS, Ph. D., Professor of Mathematics. State Normal School, Stevens Point. Wis.**

How many teams of two horses each can a livery stable man send out who has 10 horses, assuming (1) that we consider the way the team is hitched and (2) that we do not.

Suppose he has 8 horses; 10 horses. Suppose he has 7 buggies, then how many different rigs can he send out, assuming that he has 10 horses, and counting both one and two horse rigs?

No solution of this problem has yet been received.

142. **Proposed by A. H. BELL. Hillsboro, Ill.**

If x/y is the convergent preceding the complete quotient $(\sqrt{A}+m)/n$; prove that $x^2-Ay^2=\pm n$.

Solution by H. S. VANDIVER, Bala, Pa.

Expand $\sqrt{A}$ in a continued fraction. Let P_k/Q_k denote the convergent preceding $\dfrac{\sqrt{A}+m}{n}$, and let $\dfrac{P_{k-1}}{Q_{k-1}}$ denote the convergent immediately preceding P_k/Q_k, then

$$\sqrt{A}=\frac{P_kx_k+P_{k-1}}{Q_kx_k+Q_{n-1}}\ \text{where}\ x_k=\frac{\sqrt{A}+m}{n}.$$

Substituting this value of x_k, ahd simplifying,

$$\sqrt{A}=\frac{P_n(\sqrt{A}+m)+kP_{n-1}}{Q_n(\sqrt{A}+m)+nQ_{n-1}}.$$

Multiplying out, and equating rational and irrational parts, there is obtained